

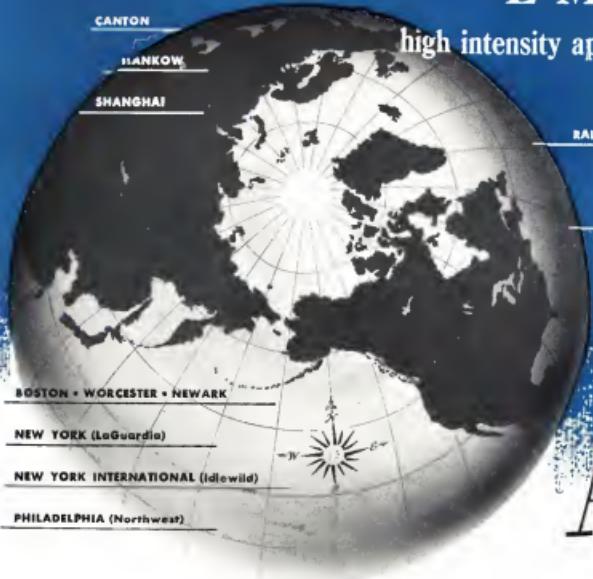
AVIATION WEEK

A McGRAW-HILL PUBLICATION

JAN. 17, 1949

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With a pair of B-36 power plants set up in tandem. The propeller of the lead engine sends the "shrapnel" back through the rear nozzle, where we start the fire. The cockpit is placed to give the man at the controls a clear view of the flames.

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AVIATION
WEEK

Vol. 20, No. 1

January 17, 1948

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without refueling. Novel built-in nose ramp, similar to the famous sea-going LSTs, facilitates handling of heavy ground force equipment such as tanks, field guns, bulldozers and fully loaded vehicles.

It is expected that the C-124A will enhance in every respect the quarter-century reputation of Douglas for leadership in the design and construction of the world's finest, fastest and most dependable air transports.

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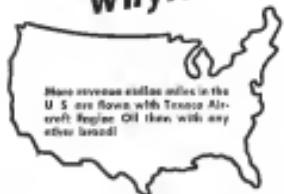


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and flight are being done in steadily increasing volume. Millions of miles of our Texas air use only hours away from the country's great aeroports. From its very first, Trans-Canada has used Texaco Aviation Lubricants and Fuels exclusively.

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THE AVIATION WEEK

The Canadian Problem

U.S. aircraft manufacturers can look forward to considerable dealings with the newly revived Canadian aircraft manufacturing industry. Regardless of whether the North Atlantic defense pact is finalized, the U.S. Air Force and the Royal Canadian Air Force will use more closely than ever before as joint defense of the Polar frontier against potential invasions.

Already the USAF and RCAF have agreed that it is desirable to have interchangeable equipment, standard training and a common tactical doctrine. This has enormous significance for U.S. aircraft manufacturers. First, existence of this are the current negotiations between Fairchild Engine & Airplane Corp. and North American Aviation Inc., with Canadian manufacturers regarding the production of these products in Canada under a licensing agreement. These negotiations are manifestations of similar problems that are likely to arise for other U.S. manufacturers.

Canadian Approach

The Fairchild negotiations begin with an approach by Canadian Ltd. of Montreal for a licensing agreement covering the F-104 G. It is no longer in production by Fairchild. Last Canadian insisted its interest to include everything now under manufacture by Fairchild including the C-119, improved versions of the P-38, the C-118 transportable bridge tractor with considerable commercial promise, the main landing gear and guided munitions. State Department, Munitions Board and Air Force offered no objection to the proposed deal and negotiations are still in progress.

The North American T-33 is another efficient. The subject of Canadian negotiations is the T-33A, holder of the world record speed record and many USAF records. The T-33, and first indigenous USAF top dog, Lt. Gen. Mark C. Gruen of the RCAF and Canadian Supply Minister Chester D. Blaik have had a reputation as a go-getter. Last Gen. Howard Coon presented the subject to North American, indicating the USAF had no objection. North American has, as will negotiate with the Canadian, who have indicated Mr. Head of Lockheed of Toronto will handle the deal if it is accepted.

Seek U. S. Sales

In both cases the Canadians hope to sell their American designed products in the British Commonwealth market which is steadily vitally closed to American products because of the dollar shortage. However the Canadians have also indicated that they hope to sell to the U.S. military services and at first post U.S. manufacturers have begun to take a second and longer look at proposed Canadian deals.

On this note there is another can history that runs down some light on the future. Canada has been building a hybrid version of the Douglas DC-4 and DC-6 known as the Canadair Freighter and powered by British engines. The Montreal firm has been successful in selling the Canadair Freighter to Canadian and British services, although it normally could not fly. However, Canadair has also tried to sell the Canadair to the USAF and the USAF has not been particularly interested. DC-4 and DC-6 aircrafts are just as the USAF at a cost considerably below what Douglas can offer. Labor rate differential accounts for almost all the price difference. Canadian aircraft plant wages are about 40 per

cent lower than those paid in U.S. plants despite the fact that the International Auto of Montreal is the dominant union in this field on both sides of the border.

Canadian Price Cheaper

The Canadians, by their own calculations, can sell the planes they build under U.S. terms back to U.S. military services at approximately 25 percent less than U.S. manufacturers can and still maintain a comparable rate of profit if this comes to pass it will represent serious competition for U.S. aircraft industry still struggling to get a firm footing in the enormous procurement volume required for survival. The Canadians are also instrumental in selling some of these products to the U.S. military services. The C-118, now a Canadian fighter made by Av. Mac. of Toronto, is the best they have to offer currently and it is competing in a field that has as yet remained non-enthusiastic U.S. entry. Obviously if interchangeable equipment is desired some Canadian planes will have to be accepted by the USAF if the RCAF is to buy and use USAF equipment.

Canadians hardly明白 the Canadians for attempting to revive their aircraft industry since it has become obvious the world over that a healthy and efficient aircraft industry is one of the vital requirements of survival survival. A realistic view of the strategic situation in Western Europe gives further stimulus to Canadian desire to gain independence of Fairchild aircraft production. A trend toward moving most of Fairchild aircraft production capacity to Canada is already discernible particularly in the heavier types of planes leaving Britain to concentrate on jet fighter types.

Changed Economics

Potentially significant for Canadian production of first line USAF tactical aircraft was begun in an economic climate that saw the U.S. aircraft manufacturing industry suddenly presented with short all the production it could immediately handle by virtue of the expanded aircraft program viewed by 80th Congress. Now with the current economic situation the company that has the largest U.S. manufacturer is likely to find itself in the view that they should take the plane RCAF wants in their own plants and all those in Canada as a straight export deal.

If the Canadians are correct the experts they have several reasons to plan. The USAF now operates strategic Arctic bases jointly with the RCAF as Canadian and USAF. The USAF needs the full complement of the RCAF on conversion training and tactics. The Canadians will have excellent bargaining power with the USAF and the USAF is the U.S. aircraft industry's largest customer. The USAF's wish is likely to be the salary's command. USAF procurement officials will be faced with the dilemma of competition from cheaper Canadian built models of U.S. planes in the race of maintaining the U.S. aircraft industry at a healthy level.

These problems may appear serious. If the U.S. industry gets another shot in the arm from a Congressional vote of the Trans-Canada power budget and has its own budget full of procurement items, Canadian production may be another aircraft industry. If the Trans-Canada budget stays and U.S. aircraft industry loses slow to a walk the Canadian problem may well become acute. It is something for all U.S. manufacturers to think about.

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AVIATION CALENDAR

Feb. 10—Senate meeting, New York City
10th Institute of the Astronautical Sci-
ence, 100-102 W. 45th Street, New York
100-102 W. 45th Street, New York

Jan. 18-Job 11—Third Air Transportation
Training, American University, Washington
DC, 11-12

Jan. 19-20—Motor City conference, Na-
tional Air Association of Commercial
travel associations for transportation con-
cerns and related personnel, Cobo Hall,
Detroit, Mich.

Jan. 20—Heavy Night flight, Society of
the Astronautical Sciences, Hotel Astor,
New York City

Jan. 21-22—10th anniversary annual meet-
ing, Hotel Astor, New York City

Jan. 23—Society of Automotive Engineers
annual meeting, Hotel Astor, New York
City, New York, 1950

Jan. 24-25—Institutional Institute of In-
dustry, 10th annual general meeting, Hotel
Astor, New York City

Jan. 25-26—ATA operations division, New
Orleans

Feb. 1-2—National Aerospace and
Space Council, Hotel Astor, New York

Feb. 1-2—Motor City conference, Na-
tional Air Association of Commercial
travel associations and related personnel,
Cobo Hall, Detroit, Michigan

Mar. 3-5—Society of Automotive Engineers
annual meeting, Hotel Astor, New York
City, New York, 1950

Mar. 10-11—Annual meeting of American
Institute of Test Engineers, Hotel William
Penn, Pittsburgh

Mar. 10-11—Annual aircraft assembly representa-
tive meeting, Hotel Carter, Montreal,
Quebec, Canada

Mar. 10-11—Transportation Associa-
tion of America meeting, Hotel Astor, New
York City

Mar. 10-11—Society of Automotive En-
gineers national convention and air transport
meeting, Hotel New Yorker, New York

Mar. 10-11—Positive Model Company and
Eldorado sponsored by American and
the Motor Bureau of the Automobile
Manufacturers Association, Hotel Astor, New
York City

Mar. 10-11—ATA speed meet, Hotel
Astor, New York City

Mar. 10-11—Second Air Show, Oklahoma City
Coliseum, sponsored by Oklahoma City
Chamber of Commerce

Mar. 11-12—Annual meeting of the Air
port Operators Council, Denver

Mar. 18-19—Society of Experimental Test
Engineers meeting, Hotel Astor, New York

Mar. 18-19—Annual meeting, Hotel Astor,
New York City

Mar. 18-19—Positive Model Company and
Eldorado sponsored by American and
the Motor Bureau of the Automobile
Manufacturers Association, Hotel Astor, New
York City

Mar. 18-19—First annual Southern California
Institutional Air Show, Army Beach

Mar. 19-20—North Pacific regional air
show, Spokane, Wash.

Mar. 20-21—National Aerospace Com-
munity luncheon, Hotel Holiday, Chicago

PICTURE CREDITS

15, 16—AP; 17—McGraw-Hill
World News, 18, 19, 21—Corbis; 20, 21—
EPA, AA, FILE and 20, 21—Photofest.

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**Delivering 600 Gallons of Perfectly Filtered Fuel
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The picture above was taken during the single refueling stop made by three Air Force F-80s on a record breaking cross-country speed flight. This is more to refueling three planes than just filling the tanks. Every drop of fuel must be thoroughly filtered between the fuel truck and the plane. It must be as free from water and other impurities as the finest filters can make it. That's why the U. S. Air Force specifies Bendix-Skinner KG-66 filters, four of which are indicated by arrows in the picture.

These filters were chosen for two reasons: they assure exceptionally fine filtration and extremely high flow rate. As a result, 600 gallons of fuel were delivered absolutely free of harmful water and impurities—in 1 minute, 54 seconds! The advantages of such efficient, economical filtering are obvious and applicable to all aircraft. Bendix-Skinner makes a complete line of fine filters for every aircraft purpose, so specify Bendix-Skinner filters for your ground and air-base operations. Write the factory direct.

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construction, among facilities.

The world competitor with a \$194 million commercial aviation procurement expenditure by CAA and NACA for the current fiscal year, and a \$196 million loss expenditure for the 1945 fiscal year.

Budget Breakdown—The budget proposes these record allocations for civil aviation programs for the coming year.

CAA, \$18,068,900—\$17,808,500 cash and \$67 million contract authorizations. This brings by \$18,338,500 CAA's current year budget of \$15,470,000 and \$19,800,000 cash and \$54 million contract authorizations.

The President's budget would seek \$66,651,000 supplemental, boosting CAA's current year funds to \$397,895,000.

CAB, \$35,930,000—An increase of \$10,000 over the \$31,450,000 proposed for this year. Of the increase, \$16,000 is earmarked for stepped up mail and air mail work, and another \$10,000 for airline cost standards development. (The President indicated he would seek a \$107,900 supplemental, boosting CAB's current year funds to \$107,900,000.)

NACA, \$55,285,000—\$51,715,000 cash and \$71 million contract authorizations. This is \$19,895,000 over NACA's current year budget of \$46,100,000—\$47,918,000 cash and \$12.2 million contract authorizations.

CAA Increases—Major CAA increases are proposed for operating and maintenance facilities, for expanding the electronic and communications programs, and for areas moving forward with the long-range survey facilities program looking to all within going in about 15 years.

Totals of CAA program amounts remained in the 1938 budget.

Salaries and Expenses, \$97,457,000. This compares with \$80,451,000 for the current year. It includes \$69,236,934 for operation of the federal aeronautics system, \$11,731,000 for the CAA, \$10,241,707, \$11,062,725 for the civil enforcement budget, more than the year's \$10,360,000, \$12,515,730 for operation of research, slightly above that year's \$12,180,500, \$745,565 for airport planning, (compared with the year's \$500,871).

Establishment of Air Navigation Facilities, \$78,193,000—\$82,616,000 cash and \$16.5 million contract authorizations. This is more than double the \$22,098,000—\$19,994,000 cash and \$12 million contract authorizations provided for the current year. Of the proposed \$92,150,000 allocation, \$2,179,000—\$3,500,000 cash and \$10.5 million contract authorizations—for expediting the federal aeronautics system with permanent aids for all-weather flying. Estimated for location of permanent aids is \$8 million of the proposed cash appropriations.

Development of Air Navigation Facilities, \$10 million—\$9 million cash and

\$1 million contract authorizations. This is for moving ahead with research required in the 15-year all-weather facilities program proposed by the Radio Technical Commission on Aeronautics. Expenditures will be supervised by the Air Air Navigation Development Board (AVIATION WEEK, Nov. 26).

Airport Program, \$31.5 million—\$32.5 million cash and \$36.5 million contract authorizations. Of this amount, \$11.5 million will be used to liquidate contracts, leaving \$10 million available with which to start a new program. The new will focus airport construction at the lowest cost level. CAA had \$44 million for the year—\$7.5 million cash and \$17 million contract authorizations.

Flight Safety, \$55 million. CAA was given \$8 million in contract authorizations that year to start construction of new commercial airports at Newburgh and Fairbanks.

Washington National Airport Operation, \$1.5 million. This is a right in excess of the \$1,185,000 for the year. An additional \$21,500 for construction was included. The year CAA had

\$1,518,000 allocated for construction. **Techwood Development**, \$1.5 million. This is the same amount available this year.

NACA Increases—The \$81,295,000 recommended for NACA provides for a long increase in personnel and a major expansion of its construction program. The following includes:

Salaries and Expenses, \$48,707,000—\$49,000,000 over this year's allocation of \$37,500,000.

Construction and Equipment, \$35.5 million—\$35 million cash and 21.2 million contract authorizations. This compares with this year's \$25.2 million allocation—\$18.2 million cash and \$13 million contract authorizations. Under the 1940 budget, NACA would have been given by \$12,515,000 construction program at Langley Field in \$11,332,000 program at the Ames Laboratory, and a \$16,853,000 program at the Cleveland Laboratory.

For the current year, NACA's increased obligation for new construction at the Langley Laboratory is \$17,275,000, at the Ames Laboratory, \$250,000, and at the Cleveland Laboratory, \$64,400.

Symington Says:

"None too much time"
to provide 70-Group
Air Force as planned.

Stress was given to build up a 70-Group regular Air Force, plus reorganizing it since before it is too late was sounded by Air Secretary W. Stuart Symington in his first annual report published last week. This program requires 12,441 combat aircraft.

Symington's plan was written last summer at the end of fiscal 1948 but delayed the day before President Truman submitted his fiscal 1949 budget to Congress calling for a shift in the USAF to 48 regular groups and 9100 planes. Symington wanted that it be overhauled to coincide with the second step in the 70-Group program begun last year if the United States is to attain its purpose by 1952.

None too much time to provide itself with the means of its own production, Symington cautions. "It cannot afford the loss of its time and resources that are inherent in reorganization and reorganization."

When queried on his shift of the Air Force, President Truman said that the author of the plan was a multiplying increase in power and that the more he has of power and men was a better textbook. Symington emphasized that 70 combat groups are essential to the four next expansion programs which had



Stuart Symington

been contemplated for the Air Force. **USAF Plan**—Symington listed the four principal objectives of the USAF expansion program:

- Replacement of obsolescent World War II type planes with the latest technically advanced types capable of meeting new combat needs and a new political advantage.

- A research and development program that will constantly provide the best possible operational equipment.

- Disposition of a long range striking force that can shake off hostile attacks at its source and operate as a mobile deterrent to potential aggressors.

• Research and develop the utilization

of atomic energy for the quick, in power economy for the quick, in power required in event of war.

Expansion Schedule—Symington pointed out that the USAF expansion program attacked 55 combat groups by last January. It now has 60 groups and was scheduled to be at 65 groups by June 1949, and 70 groups by the beginning of September. He said that by the time the full 70 groups were activated 60 of these would be at full combat strength.

Symington also urged Congress that the aircraft industry should bring its lagging production rate up to schedule by next July, the end of fiscal 1949. **Priority Goals**—Among the top priority goals of the USAF during the present fiscal year Symington listed:

Long Range Personnel—USAF wants legislative authority to expand its appropriations over a five year period rather than the present two years.

Engineering Center—USAF will ask for legislative authority to begin establishment of a large air engineering and development center for aerospace aircraft and missiles.

Radar Warning Net—Research and procurement funds will be sought to establish a radar warning and fighter control network to protect the American continent against surprise air attack.

Transport Prototype Development—USAF will support a federal program to develop prototypes of cargo and transport aircraft that are suitable for peace time commercial air service needs and be utilized for military utility.

Strategic Property—USAF will seek to avoid buying over War Assets Administration responsibility for disposition of war surplus aircraft and parts after Feb. 26, 1949.

Speed Gains Seen

At Miami Air Races

Ace speed pilot of fighter plane class, known as a sensible work fast track in the 1939 Continental Masters Race at Miami, when Steve Wittman, Ormond, Wis., veteran race pilot and designer won the first event with 176.657 mph, has been setting seven mph faster than the 1939 maximum speed record since time of Hawaiian Bill Salmons in the 1948 Goodfellow fighter final at Cleveland.

Wittman's strong partner, William Bill Bernhard, who won the Continental last year, finished second with 174.791 mph and both have set a record of eight consecutive in the 21-mile race around a two-mile course. Wittman was flying his "Beast" model in which he took second in the 1948 Goodfellow, and Bernhard piloted the Wittman designed "Beast" plane.

Long Chester Battle-Herrin competition was the only one to show a slight

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Long Chester Battle-Herrin competition was the only one to show a slight

slowdown, necessary for the quick, in power required in event of war.

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Priority Goals—Among the top priority goals of the USAF during the present fiscal year Symington listed:

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• **Strategic Bomber**—Charleston, S. C., food base operator, received the semi-annual championship which he had last year to Woods Hole, Mass., and Langley, Va., operator. Housatonic Airfield at Wilton, Conn., was the runner-up.

Scouting—Spartanburg, S. C., pilot, Tom Smith, received the semi-annual championship which he had last year to Woods Hole, Mass., and Langley, Va., operator. Housatonic Airfield at Wilton, Conn., was the runner-up.

Refueling—Long Range Personnel, using the air in refueling program, maintained its semi-annual championship which it had last year to Woods Hole, Mass., and Langley, Va., operator. Housatonic Airfield at Wilton, Conn., was the runner-up.

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Admiral James T. Turner and Major Gen. Bill Ward, Novaeus Cluster at Wiesbaden.



BY NIGHT—The landing and taxying lights of an incoming C-54 from the left between the approach lights.

Tunner Outlines 'Ideal' Cargo Plane

After six months of operations, commander describes requirements; makes suggestions to manufacturers.

By John Cheshire
AVIATION WEEK Writer

WEISBACHEN, Germany.—Airlift task force commander Maj. Gen. Bill Tunner outlined the cargo plane of the future he believes the first six months of "Operation Berlin" in an exclusive interview with AVIATION WEEK.

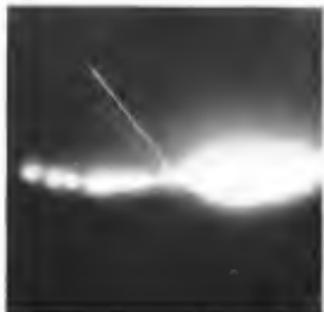
Tunner considers goal of the six months of larger-type aircraft, one of the prime lessons learned from the airlift

—but the same, ratio as the B-17-type plane

—is cheaper than the 3.5-ton plane. "We feel that the type aircraft should be the one generally designed for carrying freight," said Tunner, who also directed the "Hump" operations during the war. "It must be economical to operate, have maximum rate of maneuver, and be capable of landing with one set of gear or with gear down. All major parts of its design should be redundant to this test. Will it reduce cost?"

► **Cargo Plane Requirements**—Tunner and his staff want certain requirements published in any one-type plane. They are: maneuverability, reliability, and economy.

► **Design**—A conventional four-engine transport type with 3000 cu ft. loadable to the down 25 tons after a 3000-



BY DAY—The poles of the high-intensity approach lights at Tempelhof stand out above the trees of a reservoir.

hr flight. Cockpit designed to permit operation with a crew of not more than two when navigator is not required.

- Performance—A maximum of 375-380 mph, ability to climb 10,000 ft with full load, and ceiling operation at that altitude for 10 hr, to permit occurring several flights round-trip from Berlin enroute. Adequate power and flight characteristics to insure safe landings and takeoffs on the 6000 ft runway normally found at existing airports.

- Loading—Aircraft designed for loading to an average density of 10 lb/cu ft up to a 25-ton load. Trade loading width of at least 16 ft.

► Loading and unloading without aid of equipment such as dock, lifts, etc. Several cargo doors large enough to accept a full truck load of cargo. Monotube for cargo management when the plane is on the ground.

► While Tunner declines comment on an airfield plane shift, it is generally believed that a change in aircraft strength as the C-74, C-97, C-124, etc., would be too drastic in terms of training for op crews and maintenance, and it would delay necessary servicing facilities.

► Interplane aircraft—such as the DC-6A cargo version of the DC-6 has been mentioned to bridge the gap between a C-97 operation and use of larger planes. The DC-6A can carry 21 tons more than the C-54.

- **Traffic Control Advances**—A coming CAA order recently observed: "The airfield has advanced the art of traffic control about 10 years." Tunner: "The interesting and comprehensive revision of the airfield control of CAA, and its approach methods."

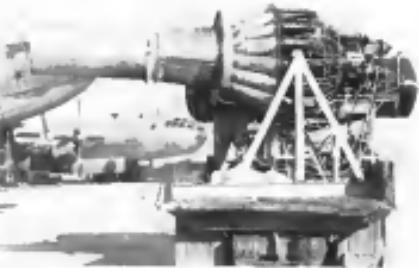
In his new role as a primary test-down method for handling intruder traffic, CAA has proved itself "beyond doubt," says Tunner. "Without CAA, our operation would not have been near so successful. Indeed, we couldn't have flown at all some days."

- **Test At Ober—Landing at Jena airfield with CAA has become standard procedure. With simple straight-in approach patterns at each field, CAA can have four planes in its scope at the same time and direct two aircraft at the same time.**

► Straight-in approach patterns have expedited traffic control, but the point where final maneuver intervals or less are necessary in the operation. Safety factors have been enhanced by the elimination of standing and holding.

- **Overhead Expenses**—While traffic control has helped keep overall flight costs high and accident rates low, overhead of the C-54 is proving expensive.

Tunner's recommendations have caused a number of recommendations for development of aircraftmen round out training requirements time. To aircraft men, which when they make these proposals



Mobile 1000-watt radio transmitter van of Major Gen. G. Lehman. Now used to clear air force strips of radio planes, etc. being adapted to clear routes.

- An auxiliary powerplant capable of operating the aircraft electrical system on the ground and providing sufficient power to permit use of extension cords at service stations. Heretofore outlets should be provided in the landing gear walls and on floors.

- An air compressor of sufficient capacity to 10 percent of static time requirements, etc. A unit of this type could be used to power pneumatic tools.

- Fixed air provisions for use at a flight line, including a propeller change bay and a fueling bay.

- A water tank on each engine that would eliminate the necessity of changing oil every 100 hr as previously required. Use of cartridge filters that could be replaced easily and quickly might be a solution.



Control overflights over Potsdam grade-separated highway. This, as well as the other eight photos, a time exposure. White lines are headlights of moving traffic.

PRODUCTION

Cutbacks Make Way For New B-36 Orders

U.S. Air Force extended \$100 million worth of scheduled jet bombers, fighter and helicopter production to buy a substantial new quantity of Convair B-36 bombers. Previous order was for 96, of which 36 have been completed.

The new Convair order will include the B-36, a 10-engine propeller re-supercharged version of the B-56 featuring an Pratt & Whitney Wasp Major engine and four jet engines, plus a pair under each wing tip. The jets will be operated only as emergency power to provide extra action on long missions.

► **Modifications**—Included in the \$100 million to be reshuffled will be modifications to B-52s and Boeing B-50s now in production.

The following 1949 production schedules were canceled by the Air Force to provide the \$100 million:

- Northrop 30 R-45 prop flying wings-to-horn nose hook at Convair's Ft. Worth plant.
- 10 C-115 Raider transport aircraft
- transports and anti-sub planes.
- North American 17 B-55A, long-range light bombers. These were the last of an original order for 180 B-45s now in

production at North American's Long Beach, Calif., plant.

► **100 F-94s**—existing jet fighters

These fighters were originally designated the F-86C and were intended for production during 1949.

► **Refelt-10**—10 two motor transport helicopters. These helicopters were designed by Refelt but was to be produced by some other company to have been designated by the USAF.

Because of the B-36 order and much of the B-56s are aimed at putting a long range striking force into combat

as soon as possible, President Truman's budget message cutbacks the Air Force to 40 aircraft groups. Action

was taken by a special board (Admiral W. E. Jones, 101) composed of Convair, Northrop, Craig and McNeely.

Small Business Work Totals \$28 Million

DAYTON—More than 1,000 Air Force procurement contracts totaling \$28 million have been let with small business—establishments employing fewer than 500 employees—in a six-month period ending Nov. 30, 1948.

Aircraft Manufacturer Mergers?

The recent shifting of aircraft orders among key leaders is being viewed by informed observers as strong impetus for further merger discussions within the industry.

By forcing Convair with a revised order for the B-36 while withholding some awards from Northrop, the Air Force could be passing disfavor to the company in its competition with Convair, a previously damaged competitor, it is pointed out.

Recently, airfield reports have indicated that talks negotiations have been opened for a three-way deal involving Convair, Northrop and Curtis-Wright. This combines such considerable parts of the aircraft plant Convair, Northrop, the remaining Curtis-Wright, and Curtis-Wright the cash.

It is known that a Chicago industrialist has been making overtures to Curtis-Wright for a share of that projected consolidation but was meeting with resistance.

Major Gen. K. B. Wolfe, director of procurement and industrial planning for Air Materiel Command, announced Jan. 17 that 1949 contracts, at nearly half of the total number let in that period had gone to manufacturers in the less-than \$100-employee category.

► **Subcontract High**—In addition, he estimated, subcontracts let to small businesses by other Air Force procurement will total many more millions of dollars, presently for contracts going into USAF planes.

While other small manufacturers take advantage of the opportunities now available to become a Defense supplier, the percentage of small business in the total volume of contracts is expected to remain even higher this year.

Small business in more respects has as yet over the big corporations in bidding competition, AMC procurement analysts report.

Research costs which vary and boltage for big industry is arriving at contract bids, are often part of a fixed overhead for the small firm. And the small manufacturer can profitably accept a contract which will long pay him at expense, operation, but which would be negligible for the huge factory of his big competitor.

Utilization of small business contracts and their value against the total number of contracts let and their value

Item	Contract Price	Procurement Value
Subcontracts	\$16,000,000	\$12,151,510
Small business	16	16
Large business	15	15
Total	\$16,000,000	\$12,151,510

Source: AMC, 11 June 1949.

Major Gen. H. A. Shepard, procurement division chief, points out that many small businesses which are responsible and qualified to bid for the contracts have not yet registered to become qualified Air Force suppliers.

Application should be addressed by the firm to Commanding General, AMC, Wright-Patterson AFB, Dayton, Ohio, AFMRC MC4PNS572, Small Business Division. The firm will receive a letter in regard to production and available facilities.

New Altimeter

A new sensitive altimeter with a simplified dial that cuts to a minimum the possibility of introducing error is disclosed last week by Kollsman Instrument division of the Sperry Co.

In place of the three pointer rigs, 10,000, 20,000 and 30,000 ft. grade now on present Kollsman altimeters, the face of the new instrument has only one dial that rotates in 100 ft. steps and makes one revolution per each thousand feet. A two digit counter indicates altitude in terms of thousands of feet.

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YOU CAN DEPEND ON



How Much Force Can Body Withstand?

Tolerance to acceleration is prime factor in fast-craft operation.

By Charles F. Lombard*

With the development of high-speed aircraft designed to withstand large aerodynamic stresses, the problem of human tolerance to forces associated with acceleration has become of major importance.

Particularly in high speed craft, various maneuvers, meteorologic conditions, belching, accidental impacts, and the like, impinge upon the human body whereas often far beyond ordinary experience.

Radiation damage from ionization of tissue and judgment to unconsciousness and varying degrees of damage to the body's structure.

If one enters to the laws of motion, equations 1a, 2a, 3a, equations will be forced to contain no terms for the forces. Therefore, no force associated with the velocity shall still be applied to the body in consequence of uniform motion in a straight line at any velocity.

On the other hand, if motion involves a change in velocity, or if it departs from a straight line, a term for force appears in the applicable equations.

When velocity changes, in straight line motion, the rate of change is termed the acceleration. Since mass is always involved, the applicable equation is $F = m a$, or in other words, a mass is brought into action which is proportional to the mass affected and to the linear acceleration imparted to it.

If a zone moving at uniform velocity in a straight line is caused to depart from that line and to move in a curve, or

⁴ Associate Professor, Dept. of Anatomy, Medicine, University of Southern California.

Explanation of Chart

Plotted on log-log graph I inserted the equation for velocity $V = gt$, where g is acceleration in multiples of the earth's gravity, t time in seconds, and velocity V in feet per second. Also plotted is the equation for distance.

where θ is steering deflection in deg. N

Front D shows the increased tolerance provided by Cstat plus attained by the reflected.

for reacceleration to G , while the velocity in a stopping distance is zero, heat is not lost during deceleration or heat.

the 1.9 sec. time interval the 100-
inch bin of the velocity or acceleration
time group of 0.25-0.2, covering
100 sec. time intervals.

WE SOON FROZEN, BUT THE FROZEN FISHES WERE FRESH.

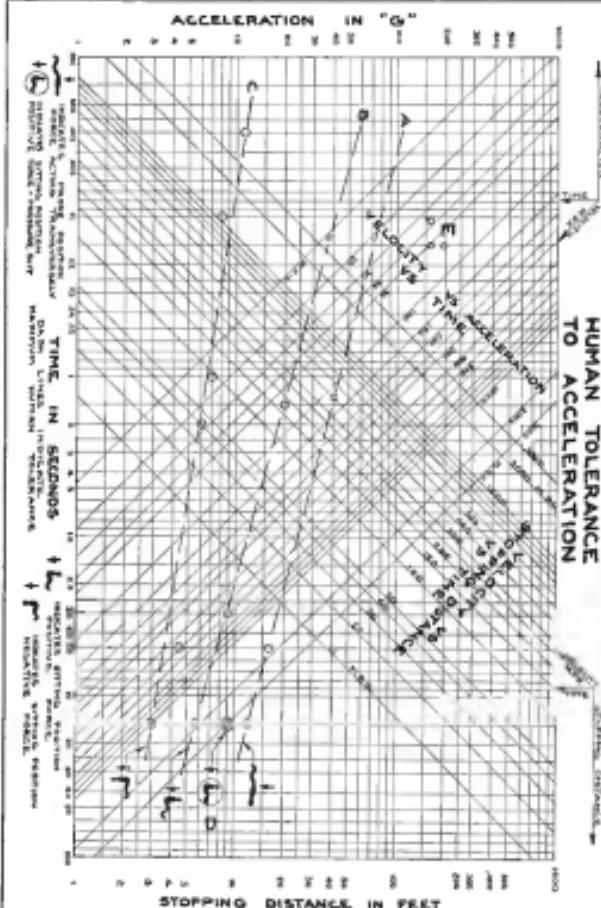
Human Tolerance to Accelerations

Position	Apparatus Telecenter	Total Telecenter	Source of Information
Second + G	+ 5.0 G	15 sec	Ref 12
	+ 9.0 G	1 sec	Ref 7
	+ 8.0 G (estimated)	15 sec	Unpublished (USC)
	+ 6.0 G	30 sec	Ref 6 (Navy)
Second - G	- 1 G	71 sec	Unpublished (USC)
	- 6.0	2 sec	Ref 7 (Air Corp)
	- 7.4 G	0.5 sec	Ref 7 (Air Corp)
	- 8.3 G	0.00 sec	Ref 7 (Air Corp)
Transverse G	21 G across	31 sec	Unpublished (USC)
	27 G across	1 sec	Ref 9 (Navy)
	40 G across	16 sec	Unpublished (Navy)

angular path having a given radius from the axis of rotation, it moves as outward force increased by the condition

$$F = \mathbb{Q} \left(\frac{p}{q} \right)$$

Orlmann stated, the fence married



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of velocity has been twenty times that which would be caused by gravitational forces.

► Action on Body—The magnitude of these forces in the human becomes apparent when we consider the areas over which they act. As the area becomes smaller the pressure becomes larger, and as localized pressure increases at least one result which is destructive.

Degrees of destruction as well as the extent depends upon the physical characteristics of the tissues involved, and amount and duration of the pressure.

Considering, for example, the effects of a 2000 lb. force on 4 sq. in. of head and the effects of the same force on 4 sq. in. in the first case, the pressure is 500 psi, in the second, 1000 psi. The latter would be destructive.

Effect of force upon the body depends on the duration of application in relation to the magnitude of the force, as well as on the site and area of application.

If the force is large, but acts for only a very short time (from a fraction of a second to a few thousandths) the predominant effect will be due to locally applied pressure.

If the acts upon soft tissues, pressure waves may be generated whose values will depend, in turn, on the velocity of the agent impacting the force, the kinetic energy of the agent, and the area of contact.

These pressure waves will travel through the several mass of the body and will produce various effects dependent upon the structure and function of the tissues traversed. If the force acts upon the skeletal structure, there is a fracture.

► Large Force, Brief Application—As the magnitude of the force increases while the duration of application decreases there is a transition into the field of shearing forces.

Merely consider a high degree of local tissue destruction depending upon mere forces beyond the range of this discussion.

However, rate of transmission and magnitude of shock waves into the skin area of contact from a source in the tissue has been determined, and shows a velocity of propagation of pressure waves to be approximately 4,200 ft./sec.*

If we consider the effects of a very brief application of a large force to the head, as is conducted in two separate observations: (a) An absorption of 100 to 200 G (gastro centimeters); (b) an absorption of 200 to 300 G of energy in a brief period of time from head damage to the brain.†

These observations are only approximate since in (a) the force acted for approximately 0.25 sec., yet may have caused the acceleration to 100 G in while in (b) the absorption of 200 G is of

energy may have occurred in either a fraction or a multiple of a millisecond.

► Body Position—When forces are applied for a longer time we must consider the manner and direction of application relative to the body.

When the force is directed from the head to the feet the acceleration is used to pass from the feet to the head, the acceleration is negative.

When the force is directed transversely through the body acceleration is used to translate and is further utilized in the passage of the individual. If the force is directed down the back toward the stomach, the individual is used to be a passive position. If directed from the stomach toward the back the individual is used to be in a passive position. If the force acts from side to side, he is in a lateral position.

Obviously there is a possibility of a combination of the various positions and force terms present in any one individual or in any one mechanical and a passive position, as well as in a more complex position in which the person lying on his back is somewhere between a supine and a vertical position.

There is also a modified position in which he sits or lies seated with his knees close to his chest, with the direction of forces due to acceleration usually from head to feet.

► Action of Blood—All of these positions are important in considering the effect of application of positive (head to feet) forces due to acceleration since the height of the column of blood between the heart and the lungs, measured in the direction of heart, determines the amount of acceleration which can be tolerated for relatively long periods of time—say three seconds or more.**

If the hydrostatic pressure caused by the column of blood in greater than the blood pressure (at least 50% generated by the heart), the circulation through the heart will be arrested. When the pressure in the blood contained in the capillaries of the brain is so far up by the nervous tissue the blood will cease to flow. The extended head will exhibit changes in performance of the nervous system, progressing rapidly from poor judgment to complete unconsciousness.

Regardless of the magnitude of acceleration, up to 9 G (head to foot), which deprives the brain of circulation, there appears to be a period of time of approximately three seconds during which the brain will function. The average individual will arrest the circulation through the brain caused at approximately 4.5 to 5.5 G unless there is an additional force assisting the heart in maintaining a sufficient head of pressure.

Shaking of the muscles of the legs and abdomen, as well as the use of positive pressure suits, assists the heart in

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minutes Saved
are
HOURS GAINED



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If you have fluid lines in your plant you can increase efficiency and save precious time with Hansen Couplings. Any line can be quickly and easily connected or disconnected without loss of liquid or gas in the line.

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From a wide variety of available sizes and types you can select the Hansen for any application—air, oil, and gas, water and steam, gasoline, gasoline, kerosene oil, and carbon... each type of service has a Hansen Coupling designed to meet its specific requirements.

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but not in its use
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STAINLESS STEEL

RECENTLY, as its departure from the road, the great R-10 Flying Wing research aircraft was shown at the National Airports' Congress of aeronautical efficiency in flight in an all-wing plane which eliminates of drag-producing appendages.

Though revolutionary in appearance, the Flying Wing conforms entirely to long-established practices by using stainless steel wherever requirements are necessary.

Today in the fighter-bomber planes, U.S.-S-528 Service and U.S.-S Stainless Steel successfully functioning despite extremes in high or low temperatures.

Used for many years by the leading makers of poultry and commercial aircraft of all types, U.S.-S Stainless Steel successfully meets the stringent requirements for engine and airtframe parts that must have not only high resistance to corrosion, oxidation and erosion but must provide on these properties at extremely high temperatures for many hours at a stretch. It provides superior resistance to severe fatigue. It holds well to extreme temperatures for arc and resistance welding and other joining processes.

To insure optimum results both in its fabrication and in performance we offer you the practical application of our Stainless engineers who are experts in this field.

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U.S.S. STAINLESS STEEL

WIRE - STRIP - PLATE - BARS - HEAVY - PIPE - TUBES - NICKEL - SPECIAL ALLOYS
UNITED STATES STEEL

mentioning sufficient pressure to keep circulation through the lungs at positive G levels above ordinary tolerance.

► G. Tolerance-if the individual is seated in a reclining position, the G tolerance level is increased corresponding to the decrease in the heart-to-hand distance in the direction of acceleration.

In the prone position place about one minute at 12 G for 10 to 30 sec. In the supine position (on his back) he can tolerate 14 G for 10 sec or longer.

At higher G levels in prone and supine positions, however, it may still not be possible to bear down. In a supine position many men have been known to survive 20 G of 0.015 sec duration.

Men's tolerance to negative acceleration is less than that to positive acceleration, due to pooling of the blood in the soft tissues of the head, face and neck as well as those in the chest cavity. Men's 11 G has been tolerated for 0.03 sec with only slight discomfort in abdominal region. Men's 3 G has been tolerated for 15 sec with only a dull aching congestion of head and neck. At about 4.5 G head and neck congestion is quite painful.

The arterial system becomes compressed plus G and when demands of oxygen are great enough that the vessels will constrict to a minimum, the magnitude of acceleration is well worth logic to produce forces of destructive magnitude.

At approximately 25 G, while seated, there is the possibility of fracture of the vertebrae. Humans have tolerated 30 G developed during static oxygen experiments in 21 sec. Lasting 60 sec, only several thousandths of a second? Neglecting to know concerning the effects of acceleration of this magnitude on humans it is common for longer periods of time.

The clarity of the various structural components of the body immediately preceding development of a fracture of large magnitude, far fraction of a second, which would not be tolerated for longer periods.

► Goss-Ost Blackout Red-Out-Green-out and Black-out are colloquial terms referring respectively, to the narrowing of the visual field and to the temporary total blindness occurring during pull outs.

The fluids within the eye are under an absolute pressure of approximately 35 mm. Hg. This pressure correspondingly lowers the effective pressure causing blood to circulate through the retina of the eye.

In the event of positive G it is assumed a valve is opened in which the increased hydrostatic pressure of the blood between the eye and the heart enough to exceed the effective circulating blood pressure.

If the blood pressure is 140 mm Hg

and is rising up, this will be less supplied with oxygen by circulating blood, but not the retina, a process known as anoxia but not nothing down blackout.

Gas-out occurs when the circulation through the eye becomes so feeble that an inadequate supply of oxygen reaches the last resistant light sensitive cells in peripheral vision. Central vision is the last to fail.

Normally, in relaxed individuals, gas-out occurs at 5.5 to 5 G. Persons with eyesight are even a state of hypertension will tolerate these levels. Hot dogs, seizures, fatigue, and other events and conditions which normally make one

where precision counts . . .

B H

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Subject to manufacturing costs



Side view of
E-2000 Engine

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feel poorly will lower these levels. A state of well-being under moderate conditions is natural for maximum resistance.

Red-dot or strong red has been associated with exposure to mental G and apparently has been experienced by some pilots in outside loops and stalls.

The lesson for reducing eye damage, as suggested by our investigation, is to cause by the lower eyelid covering up over the eye. Strong light should pass through the eyelids and should be most noticeable during mental G since the lower lid has no muscle to retract it from over the eye.



From Horseshoe Iron to Aircraft Alloys

Beginning in terms of tonnage, iron, Ryerson steel stands and steel products now lead the steel manufacturing process in the building art plateau.

On the basis of thousands of hours Ryerson men visit and inspect the steel structures of today. They are an intimate part of the steel through the atmosphere of the high-speed planes of the Air Age.

This century of service to business and industry has been a century of growth. Ryerson has been a high producer. Keeping stocks of carbon, alloy and stainless steel—continually changing with the times—always carries the association of craftsmanship, every step forward.

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background. It is revealed that approximately 18 percent of the executive and managerial positions in the 516 agencies have equivalent or one now held by managerial positions.

Study now points out that college librarians should continue to stand through generations on basic principles as their major function, that equipment should be kept up-to-date and modern products methods should be shown in the library taught in cooperation with industry.

• Help from Industry-Surely few people think that industry should help meet increased costs which progressive libraries are incurring.

In outlining ways in which support can best be afforded, 180 respondents said that grants should be given to colleges either directly or through associations of institutions. Another 733 believe that industry programs can reduce the cost of special projects as departments change work related to its field.

Some advanced board members of cooperative work and study, while often believe that industry should greatly increase its efforts of scholarships and fellowships in the colleges. A recent example of such assistance is that of the Lockheed established by Howard Hughes, a private foundation at California Institute of Technology (Aviation Week, Jan. 3).

The 75 percent who believe teachers are underpaid say that the colleges will have to offer salaries more nearly comparable to those paid in industry if they are to obtain top flight personnel.

One of those queried, James H. McGraw, Jr., president of McGraw-Hill Publishing Co., New York City, said that educational support by industry and business "is a source of self interest on the highest plane, as an adequate supply of well-trained men will be necessary if we are to maintain and improve our position as an industrial nation."

Radar Beam Hazard

Radar beams can set fire to aircraft fuel, according to the results of a test program conducted by the fire department of the North American Co.

Standard SCR 720 and ARG-35 radar units were beamed at ANF-F1 grade gasoline, and the fuel was ignited at distances of less than 25 ft, when metal objects were in the beams.

The pulse energy is packed up by any good conducting material, such as a metal fuel tank, and set fire to the gasoline.

The tests also indicated the possibility of light metals being heated by radio beams to temperatures high enough to ignite fuel vapors.



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- Tests and repeated use show effect on Alclad is infinitesimal.
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Cee-Bee announces the "Improved A-3" aluminum surface brightener. It is much safer than any other similar material ever developed; does a finer job of oxide removal, of cleaning and brightening.

ABSOLUTELY SAFE Northrop Aircraft Research Laboratories have made comprehensive tests on Cee-Bee A-3. Results prove complete safety on 24ST and 35ST aluminum, no effect whatever on primer or flying surfaces—even under extreme conditions. Write for complete data on this test.

Aircraft manufacturers state that the damage caused by corrosion and oxidation is many times more costly than proper cleaning. The use of the Cee-Bee A-3 Bright Cleaning method eliminates heavy scale and corrosion from under portions of wings, fuselage and stabilizers at surprisingly low cost. Find out about these Cee-Bee savings.

case study

63

Here's what this airline did—

1 Submitted the "Improved A-3" to laboratory tests for corrosion and effect on primer. Lab recommendation for actual service test.

2 Review test performed on one DC-3 for undercarriage of fuselage and wings.

Recommended for regular use for this purpose.

3 Due to satisfaction of above operation, A-3 is now used on complete DC-3s and Boeing Stratoliners.

Estimated Savings of \$50,000 and 24 man hours on each DC-3, \$15,000 and 20 man hours on each Boeing Stratoliner are reported by the operator.

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Please send me the detailed information.

Continued No-Fire-Off Report

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Results and savings of other users

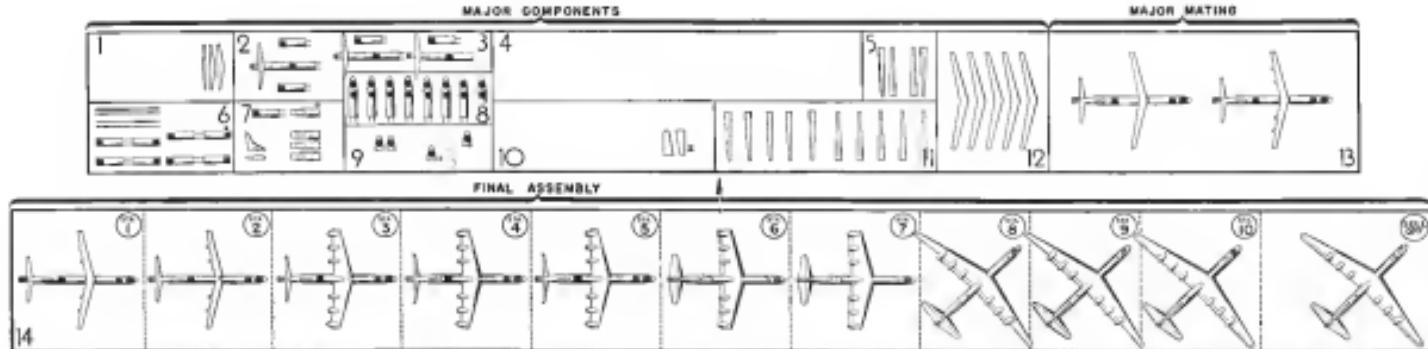
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Shown here is the first aircraft, main assembly building at Fort Worth, Texas—where B-36 is produced—a 200-ft.-wide bay stretching

tail, primary, 4; production stems, 5; wing clean up; 6; beach bay, 7; tail, 8; axon, primary, 9; anast., 10; wing stroke position, 11; wing center position, 12; wing casting, 13; major casting, and 14; final assembly. Craft at end of line at tandem address.

How Convair Produces B-36, World's Largest Bomber



Meeting horizontal stabilizer with tailcone and tail section. At this station (left end of picture), aft beam fair section is mated coaxialistically to tail



After 55.0' of compression, take is installed in both top sections; they are matched, one to one section, offset to full height, and closed in section line.

"Line" gets the accent in Fort Worth production scheme featuring straight 5/6-mi.-run for mating of huge assemblies.



Tremendous stretch of plain, 200 ft. wide, is strikingly revealed in view from site of beach bay fibration. At upper right are seen major secondary features due beach bay tract structures. Area at far right end and at left is the submargin.



First release, with hot sections clamped for spotwelding. Structure, entirely of stainless steel, is closely controlled to withstand the proper class 80.



Non-keyword search for primary literature background, stabilized. It is focused at soft tooth decay and to tell pilot evidence at being (Continued on page 37)



Blazers of the trail

Everyone who has ever flown has been on Boeing's great new Stratocruiser. It's leaving up toward the commercial flight line.

The reason is easy to see. For the two-deck Stratocruiser embodies 22 years of trail-blazing in aircraft design and production. Since its building has gone all of Boeing's vast world of knowledge, skill and experience.

Among its predecessors was the Boeing Monomail, introducing a design formula that's been followed ever since. Thus it enabled the Boeing

B-17, America's first three-deck, multi-engine transport. Then came the seven spanning B-18s, and the Boeing B-29, first pressurized-value transport.

In the military field, Boeing leadership has been just as pronounced. The early B-10 bombers established the modern trend in bombing aircraft. From it developed Boeing's great warwinners, the B-17 and B-29, the new B-52 Superfortress and the radical new 600-mile-a-hour B-57 Jetfort.

Now, the Stratocruiser subsumes the design knowledge gained from development of the whole proud Boeing line. Already proved on exhaustive flight tests, this fastest, most powerful, most comfortable of all commercial transports will soon go into service on the airways of the world.

- | | |
|-------------------|-------------------------|
| A. Monmail | B. B-10 Bomber |
| C. B-17 Transport | D. B-17 Flying Fortress |
| E. Stratocruiser | F. B-29 Superfortress |
| G. B-52 | H. B-52 Superfortress |
| I. Jetfort | J. B-57 Jetfort |

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As the Air Force, the B-52 Superfortress and B-57 Jetfort, the B-52 Stratocruiser.

As B-36 Approaches End of Line . . .



Wing fairing for low-drag pressure cabin. An inlet opening here has been provided and accessible leading edges coordinated with wing



Powerplant assembly, covering engine, drive gear, holdup. Each engine is on trials, goes through angle tests for leading edge cycle



At end of line, craft are tested to flight status for full weight up to 250 ft. Vertical tail extends upwards and turns over for clearance



At completed B-36 moves sideways through door of assembly building, nose of plane is picked up so that 47 ft high tail is lowered to clear

*when it
all depends
on a clamp*



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When it comes to
holding things together — under stress and strain, heat, pressure, vibration — you can really rely on Marman Clamps and couplings...Viseclamps for high temperature ducts, Channel-clamps for air conditioning systems, mamps for supporting fuel tanks, accessories and fixtures...no one puts a fin. Wherever is the varied line is the answer to every fastening problem.

There is no more need for you to spend design time on a clamp than on a standard nut or bolt. Marman's standard types will fill every need and can be specified on easily on standard nuts and bolts.

The versatile group of products is the result of years spent in the design of standardized units for every specialized application. New manufacturers can have these clamps and couplings designed right into their products saving design time and production money on jobs which once required individualized parts.

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Dynamotor "Canned" For Altitude Efficiency

A unique and compact dynamotor assembly has been designed by Boulle Aviation Corp., Red Bank (N.J.) division to solve economically the difficult problem of obtaining efficient operation of fast aircraft, rotating electrical equipment at extremely high altitudes.

The dynamotor is housed in an ordinary No. 2 can—the type commonly used for vegetables—beautifully sealed to the level of the seal. Result is that the unit functions at sea level conditions and efficiency even though it is operating at great height. Because the dynamotor is, normally, an over-revolving device, no usual bearing problems are created by operating it in a can.

A special feature of the can is its use to save weight and space, and storage rather than a cage with end caps. A bracket is provided in one end of the can and welding is done with a standard machine having a modified electrode to accommodate it.

If repairs are necessitated, the dynamotor can be fitted with one of an ordinary can opener, then removed in a simple manner.

Sealage of the housing, the Avco Can Can Co., estimates that it will withstand altitudes up to 200,000 ft before rupturing from the pressure of the compressed air level.

Metric-Size Wrenches

Open end wrenches with metric size jaws have been produced by Pneu-Tech Co., Los Angeles, for mechanics who maintain foreign-made equipment. Operating size combinations, in millimeters, are 6 x 7, 8 x 9, 10 x 11, 12 x 13, 14 x 15, 16 x 17, 18 x 19, 20 x 22, 21 x 23 and 23 x 24.

The New **Firestone** SKY CHAMPION LEAKPROOF TUBE

HOLDS AIR 4 TIMES LONGER

Greater Safety • Added Economy • More Landings
Less Servicing • Fewer Tire Changes
More Retreadable Tires

THE NEW Firestone Sky Champion Leakproof Tube brings you all these advantages at no increase in price or weight. The tube is made of natural rubber, chemically treated on the inside to greatly improve its air-holding qualities. This means greater protection to the tire because it operates through a greater part of its life at proper air pressure, providing greater safety on landings and takeoffs. This also means reduced maintenance cost due to less frequent inflating and fewer tire changes. Because the tire body is protected against the hazards of underinflation, it may be retreaded for additional service.

Write Firestone, Aircraft Products Division, Akron, Ohio, for more complete information on this outstanding new product.

Lines in the Photo of Firestone tire were drawn over NBC
property. Only the Firestone tire is shown.

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Mean
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Cherry aircraft solid aluminum rivets in a typical blind-in-round, rivetless assembly job.



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with a very simple fastening technique:

VIBRATION-RESISTANT Cherry Rivets have excellent load-filling qualities and high clamping action between the shank of the rivet and the material fastened. This gives Cherry riveted joints exceptional resistance to vibrational stresses.

UNEQUALLED FOR MAINTENANCE WORK In maintenance work, they're used alone ... unresoled. Ropes to stanch, easy to remove. Easy to replace. They enhance the appearance of any job. Try Cherry Rivets today and gain years of less expensive assembly work.

Insert the rivet in the drilled hole. With the gun, pull through the rivet stem and expand the rivet to the required size for fastening.



Cherry Rivets are made from aluminum alloy, or brass. Riveted joints are true holes in the sheet metal and have blind sides. There is a heavy coating of zinc on special heat-treated rivets, and a special heat treatment in order to protect it further against oxidation. Address Department A-100, Cherry-Rivet Company, 1215 Wilshire Boulevard, Los Angeles 12, California.



Cherry Rivet
Company
LOS ANGELES 10, CALIFORNIA

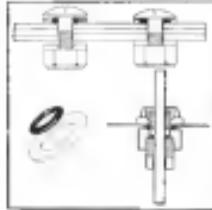
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NEW AVIATION PRODUCTS



For Illumination Problems

"Light King", practical aid in difficult lighting location in hangars, hangar and factories, is portable combination of flood lamp and extendable flexible or utility light made by Kelly Laboratories, Ossining, N. Y. Each light has 25 ft. cable, giving working radius of 52 ft. from nearest outlet. Two cords are cast aluminum alloy, stowed and handle rod are black anodized and single bare contacts cable 23 ft. It is low cost at gravity and balanced. Standard standard size incandescent bulb may be used from standard and mounted on wall or other location. Spotlight uses 150w flood lamp, trouble light takes 100w flood lamp, trouble light takes 100w incandescent flood lamp or trouble light. Wires covered with electrical grade and water-resistant material. Weight is 24 lb.



Scaling-Action Washer

Washer giving effective positive seal around screws, bolts, rivets, tubing, etc. treated wires and hydraulic applications, is announced by Franklin C. Wolfe Co., 1047 Commercial Center St., Beverly Hills, Calif. Known as Lock-O-Seal device, it seals rubber-like washer ring caused by washer-like retainer spring to prevent corrosion of metal bearing plates. If it is claimed that it will not damage wire, has locking as well as sealing action, may be re-used, and provides inner ball metal-to-metal bearing surface as stand and weaker.



Versatile Impact Hammer

Designed for end-of-life of parts where speed and high production rates are important in field of automotive, aerospace

and industrial applications. Features high impact, low weight, and high frequency. Impact hammer is built in safety disk, and is light in weight. Chemical is non-toxic, non-corrosive, nonexplosive if electrically charged, and will not freeze. It is recommended for liquid and electrical lines.



Comfortable Headrest

Two-piece headrest, developed by Telec, Inc., 1431 East 81, St. Paul, Minn., is reported to weigh only 1.6 lb. Each section is positioned just above ear and is connected to each adjustable, swivel swivel joint so that only main plane tip rests on shoulders. Dual restraining pressure and cushion. Headrest section can be removed from case without removing section from head. Single cord connection can be adjusted to either members or both. Price is \$12. Weight of 25x25x12 in. is made in Teacol plus, can be heated or heated for digging auto pedestal or small campsite.



Motors For Aircraft

Line of high frequency induction-type aircraft motors, offered by U. S. Electrical Motors, Inc., 200 E. 51st Street, New York, N. Y., designed to afford long range and duration of operation and some complete drainage of dissolved carbon. Built-in aluminum cyclizing gear assembly, built-in safety disk, and is light in weight. Chemical is non-toxic, non-corrosive, nonexplosive if electrically charged, and will not freeze. It is recommended for liquid and electrical lines.

What New Taxes Will Mean

President's proposal reflects administration thinking for business levies, but Congress has the last word.

The aviation industry will be vastly affected by the tax legislation enacted in Washington this year. While the President may propose certain levies, it is Congress, in the final analysis, who will write the specific tax bills.

The outcome for all industries, particularly the aviation groups, will be as apparent in the light of the President's recommendations. Such projections will unquestionably influence no less than the separate Congressional committees poised to write their tax bills.

With this background, it may be well to remember that despite the natural loyalty likely to greet the Presidential tax recommendations, Congress will make the final determinations in this respect. Further, the process promises to be time consuming.

► **What to Expect.** Under such circumstances, it is virtually impossible to predict the ultimate form of the legislation emanating from the 80th Congress. It is possible, however, to cast a picture on the general basis of factors surrounding the aviation industry presented largely on governmental policies as effect during the last war and in recent periods.

The aircraft builder may be subject to the same profit limitations due to high corporate and excess profits taxes as may be imposed on all enterprises. An important qualification, however, is present in the special status the aircraft industry holds in its relationship to the government.

While the official policy has been to limit special subsidies to limit profits on aircraft contracts, at the same time the government is attempting to stimulate a healthy and financially vital seat industry. This was inherent in the recommendations advanced by both the President's Ad. Policy Commission and the Congressional Aviation Policy Board.

Thus there is strong reason to believe that even if excess profits taxes should be imposed on the aircraft industry along with all other indicated enterprises, consideration of this factor in a due on measures will be handled in the investigation process.

In other words, it is probable that recognition of profits for the aircraft builder will be dealt with fully once

adequate toward the final results, after tests of all types.

► **Profit Considerations.**—Generally, the aircraft manufacturers are exempt subject to the extent of profits they may derive from military contracts. The Vought-Tufts-Allis-Aviation profits on military aircraft and components is 12 percent of sales. There is no guarantee that this limit will be attained. In fact, it is only reached. The Re-negotiation Act of 1945, which applies to contracts let under 1945 fiscal laws, contains the provision of strict restrictions in accepting reasonable and necessary costs as military contracts.

The agencies responsible for procurement of aircraft also have their own rules on profit margins and allowable costs. It is believed an informed opinion that aircraft builders may be permitted to earn at least 10 percent or more, under conditions of reasonable after sales, under conditions of reasonable after sales. There is no guarantee that such maximum return will be and will not be the opportunity at least now available.

As a number of commercial aircraft companies will obtain special relief during 1949 and 1950 from the current provisions of the tax laws under which taxes of the past two years may be applied against profits for the following two years.

► **Airline Profits.**—The airlines may be expected to escape a favorable position in the new tax laws. The same general provisions of the tax laws as apply with more exacting force to the case of low airfares. Under this manner, substantial tax credits in a result of lower losses during 1948 will ease the tax impacts on available earnings for this year or 1950.

During the last war, relief was expected from the excess profits tax in the event of a tax and pay, and excess exemption. With the single exemption of Eastern Airlines, this provision removed the industry from the payment of any excess profits taxes.

With federal power diverted toward the internal strengthening of the defense, there is strong support for a similar exemption to be incorporated in any new profits tax law that may be enacted.

Certainly the government would be working at cross-purposes with itself if on one hand it should swap all its tax strength through legislation and on the other support the industry through taxated user payments.

► **Enter Cost.**—As a matter of comment, it is significant that Eastern paid a total of more than \$15 million in excess profits taxes during the war years. Some industry observers were critical of the Hartman management as not spending wise money in excess payments in an effort to reduce its tax liability. An informed view, however, holds that if one policy were followed, the close control of operating costs might have been impossible in the postwar period that followed.

A major contribution in government policy came in the form of the contribution tax on low airfares. When originally imposed, one of the main objectives of the transportation tax, in percent, was to discourage unnecessary travel. A collateral purpose, of course, was to provide a new source of federal revenue.

The history of excess taxes on transportation is quite clear in the intention to maintain them only as a temporary measure. For instance, during the first world war, an excess transportation tax was imposed effective Oct. 1, 1917, and was finally repealed as of Jan. 1, 1918.

Effective Oct. 1, 1941, an initial 5 percent tax was imposed on all transportation of passengers. This was increased to 10 percent on Nov. 1, 1942, and to 15 percent on April 1, 1944, at which level it now remains. A 1 percent tax on the transportation of property was enacted effective Dec. 1, 1942, and continues to this day.

► **Airlines Harder Hit.**—The impact for the airmail industry of these transportation taxes no longer exist.

While all forms of transportation are affected, the airlines are hit the hardest by this impact. In attempting to broaden their markets, the air carriers must price for lower rates to make their services more attractive to a wider circle of passengers.

The removal of the 15 percent tax would afford the air carriers with greater flexibility in their pricing methods. The government, in the long run, stands to gain by this repeal. This would stem from the fact that the more profitable the airlines are in their passenger service, the less the drain on federal funds through subsidies. This is to say nothing of strengthening the air system as the most efficient form of national defense.

It is doubtful if a better candidate is in this classification can be found than the transportation excess levy. The long final effects flowing from this repeal promise to worse than offset the relatively limited increase from this source.

—Sieg Albrecht

PERFECTLY MATCHED-

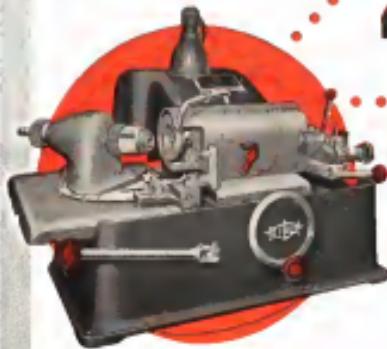
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sound insulation and smooth-as-silk stability—even in rough air—give quiet relaxation. The exclusive roll-back canopy gives excellent oil and entrance for rear-seat passengers. And there's loads of space for luggage or cargo. See how you can profitably use a Navion in your business or profession. Write today on your letterhead for a free, fully-illustrated brochure, and ask about a free demonstration flight. There's no obligation



"TAKE"—"TAKE-THO-RE!" was No. 1 on the long favorable list of comments about the 150-mile Navion. Almost every owner stressed Navion's efficiency, flying and the patented inter-connected aileron and rudder control that permits steering with what most drivers give you when you need it. This is why owners agree the safe, dependable Navion virtually flies itself.

"BUDGET"—"DON'T HAVE TO BARE IT!" One really like it—these were high on the list of Navion comment comments. The ability of the high-fidelity, all-metal Navion to withstand heavy duty passengers, all kinds of weather, on short or long-distance flights, is the reason why Navion owners by majority like them to go—and do it as simply as driving a car!

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AVIATION WORLD NEWS



Bristol Freighter used refueling aircraft, possible strips such as this



Photographer in plane in the station to shoot through panels in modified nose.

Searching for Oil in Iran by Air

New survey flights, using specially-equipped Bristol Freighter, will map 10,000 sq. mi. of Middle East.

LONDON—Preparing for oil surveys the air survey will get under way later this month in the Middle East. A specially modified Bristol Freighter of Hunting Aero surveys Ltd. already has left England to undertake the job for the Anglo Iranian Oil Co.

The operation is expected to last over a period of six to thirteen weeks with

the plane carrying out its surveys under the sun's heat for six months out of each year. It is the sixth such aerial exploration Anglo Iranian has conducted, the first three having been in 1938, 1939 and 1943.

During these missions, the survey aircraft has been based at 10,000 feet and at the end of May daytime temperatures have risen to 115 to 120 deg.

Under these conditions, it is difficult to sleep at 10,000 feet, in cold of course. Fortunately, by the time the aircraft has descended to 20,000 feet at sunset, conditions have changed completely and after prolonged periods of high flying crews find themselves with

the air during these surveys. Detailed aerial and photographic surveys made by four teams share aerial geologists to spot the likely oil-bearing locations. The road is narrow down the same to be studied on the ground and will give an increasingly clear picture of the probable oil and mineral resources of this part of the world.

The present survey is expected to add 10,000 square miles to the area already mapped.

The Hunting Aeroplane "Freighter" and a similar survey plane began late in 1947, has had its base observation panels modified further to give better visibility.

Additional panels provide suitable the photographing equipment, 16 ft. wide, to cover the "corner" and the more important forward field of view. The camera station has been moved forward slightly so that the photographer, who has panels like a backstop, can take photographs and observe through the panels at the same time.

Another change is the installation of a partition separating the nose from the aircraft's hold, solving the problem of maintaining comfortable temperatures in the camera compartment at high altitudes.

From 22,000 ft.—The "Freighter" is fitted with oxygen apparatus for occupancy at altitudes of 22,000 ft. If the flying at this height, the survey party will consume less by reducing the time required by the cameras.

The plane will carry out 100 more flights, the photographic equipment and other survey gear, in a total of 1000 hrs.

Throughout the operation, the plane and its crew will be based at Ahvaz, but overnight stops at remote airfields may occasionally be necessitated by bad weather. That is natural, however, for the six months during which the operation will operate normally are quite good for an survey.

Reducing any form late calls for a little organization. In 1937 the "Freighter" made 2000 surveys, at points where fuel arrived from Abadan in cisterns of 600 to 700 gallons at a time. At 41 gallons each after a long haul, the fuel cost was £1000.

Hot Weather—At first the expedition will work in ground temperatures of 75 to 80 deg, rising to 100 deg at night. By the end of March, conditions become more uncomfortable, and at the end of May daytime temperatures have risen to 115 to 120 deg.

Under these conditions, it is difficult to sleep at 10,000 feet, in cold of course. Fortunately, by the time the aircraft has descended to 20,000 feet at sunset, conditions have changed completely and after prolonged periods of high flying crews find themselves with

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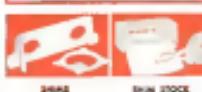
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ing they were back on the ground.

The aircraft normally carries four people on board. Two pilot and copilot, passenger, radio operator, and a captain of the Iranian Air Force who flies as observer and—near the Persian Government is advised of all items which are to be photographed—but the job of seeing that the aircraft does not fly outside the agreed limits.

Weather forecasts come from two sources—the R.A.F. station at Shirbun and personnel in the drilling units who control Abadan by phone every morning giving details of visibility, wind, cloud formation and also, during January, February and March, advice on the possibility of snowstorms threatening. After March, there is a two-month spell of fine weather, followed by a period in which heavy snowstorms are not infrequent.

Expedition—last year's expedition ran in the gas 950 hours and covered roughly 70,000 miles. After an interval at Abadan they flew to Kuwait to survey three areas totaling about 160 square miles for the Kuwait Oil Company. Then, correspondingly small job fitted with three masts and photographs were taken from altitudes of about 9,000 ft. On the return journey to England they undertook survey work for the Cyprus Mining Corporation and the Cyprus Mining Corporation.

The Iranian expedition's experience proved the British "brought" idea for aerial photography, using operating vehicles at high altitudes and taking the photos under plenty of snow and ice which had to do the job. Another attractive feature for an expedition is such a vehicle adds its ability to transport the entire party and all the surveying, photographic and survey equipment required for an unusual operation overseas.

From Planes to Trains

BANGALORE, India—India's only aircraft factory, which has handled a great diversity of projects since the U.S. Air Force stopped using it as a maintenance base at the end of the last war, has been given a major role in the development of India's planned civil aircraft industry's passenger needs for urban and short-haul flights.

Steel Sheet Industries (ASCOLI) Ltd. although its aircraft work is confined to the design, control and assembly of British training planes for the R.A.F., has been assigned a contract for 100 all-steel streamlined light-weight railway carriages built on "strength-does-weight" principles.

The carriage were developed when the factory, which is owned by the Indian government, was still being operated largely under American contract management.



Greater Blades for Bigger Jobs

New—A New Blade Construction Principle Opens New Horizons for Aeroprop

With the successful development of the tubular blade principle, Aeropropducts announces another great stride forward—Aeroprop with tubular blades engineered for engines up to 30,000 horsepower.

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lar blade. It gives high power-
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AVIATION WEEK, January 27, 1969

decks, flood-injected. One piece welded plastic canopy is attached to the rear-wall covered section. The front section is flat panel and can carry out front ejection seats and, in that way, assist the aircraft in getting it off flight by operating both brakes simultaneously. Rear forward bulkhead behind pilot's seat has safety harness and shoulder harness is provided.

Front wings are carried through structure to a main forward bulkhead which is located at minimum panel station.

Wing panels are attached to fuselage by two shear bolts at front spar and a single hinge bolt at the rear spar. Chord set front and rear spars are reinforced by laminated, carbonized, nose ribs and center ribs. Wing is mounted at each end to form a subwing. Horizontal tail covers each panel. Wing set consists of all carbonized materials and all metal construction. Rudder and elevators are cable operated. A double acting, spring, bumper system is installed from cockpit provide longitudinal trim.

General adjustable tabs are provided on each tail.

Engine is attached to each tailplane inboard by four bolts through rubber shock mountings which are attached to forward bulkhead by four bolts. A unique buffle cooling system provides adequate cooling even under strong head winds.

► **EuATC**, Pilots-Long arrived in Air Transport Command as a pilot during the mid-1940s as a member of the first crew from Piper when he has been a design engineer since 1947. The P-Shooter is a gimbled hubbed dual aircraft by his own modified to meet the specs. President Robert P. Wiss has confidence in them when we interviewed him.

Schaefer has had considerable experience leading complete aircraft and assemblies or small parts. In addition to the well known all-metal Schaefer model 12-21 complete which won the 1947 national soaring championship and many other glorias, the company is currently subcontracting to Bell Helicopter for Chase Aircraft Inc. for the Air Force glider and cargo plane and his previous built subassemblies and assemblies for Republic, Carter Wright, Fairchild, Boeing and others. The company also makes various non-aircraft products including aircraft materials and tools.

Presently, the initial production order of five Molger Mustangs will be followed by a larger order in 1968 as requirements are reviewed for the first aircraft.

The aircraft flown from Lookout Mountain, Tennessee, placed among the winners at the Molger meet.

—ALEXANDER McSURELY

BRIEFING FOR DEALERS & DISTRIBUTORS

► **CADET TRAINING**—Festus sent out by Lt. Gen. Lloyd J. Edwards USAF deputy chief of staff for personnel, aging GI flight training students to win their wings in the Air Force, are being displayed at a number of airports at the request of Gen. Edwards.

Aviation Week asked the Washington Veterans Administration to question whether a bronze's intent to seek USAF pilot training would be considered a honorable goal of his intent to make his vocational Sun Code, head of registration and records service, noted that Air Force pilot training was much different from GI flight training. But there was no need of an application for enlisted training to take the other training first intended to give a different "air" name to the question.

He said that "as far as he knew" the new USAF portion did not make any coordination easier in VA to stimulate additional GI flight training.

► **NEW AUTO PILOT**—A lightweight automatic pilot for small aircraft, designed in Bert Cottrell, is going into production at Aero Industries Inc., Cleveland, Ohio. Cottrell and Becht engineers are investigating the possibility of adapting the pilot to the auto-loads plane and are checking experimental prototype article.

Cottrell believes there is a potential market for at least 10,000 of the autopilots at flight schools now in use, and Aero Industries is planning an initial production quantity of 2,000.

► **BOWMAN BUYS PIONEER**—Pioneers of Pathfinder Flying Service Inc., of Stockton, Calif. by R. P. Bowman Co., Oakland, Calif. has consolidated two of the biggest west coast personal aircraft distributing companies.

R. P. Bowman, head of the composite business for years, and that head quarters for the Cessna distributorship purchased in the transaction will be moved from Stockton to Oakland. In addition to the eight Cessna dealers in western California and Nevada others now operating, other dealers are expected to be appointed soon.

The two companies will continue to operate with separate identities, with Bowman, a return of 30 years in aviation and with more than 52,500 personal aircraft sales to his credit, in charge of the composite organization. Bowman's "transformation" did not indicate future plans of Henry Vining, former head of the Pathfinder organization.

► **EXPANDING SPRAY PROJECT**—Strength of the aerial spraying project in blockade control in an Adaknakak area was lost recently, owing to a T-37 that took some spray administered by a Bell helicopter had led to doubling the coverage to be treated next year.

In the original operation in Herkimer County, N. Y., a 4000 acre tract was sprayed, according to Seaman Vacuum Oil Co., manufacturer of the spray. The area treated of three thousand acres was sprayed in 10 days at a rate of 1000 gallons of a mixture of sodium and thoracine spray per acre of DDT to each acre, and result was estimation of 90 to 95 percent of the blockade population at a cost of about \$2.25 per acre.

Seaman owners in the area treated said they experienced spray registration in June as compared with 40 percent of insects in the preceding June. Place this year call for treatment of \$6000 to 10,000 acres.

► **EDO CONTINUES IN FLOAT BUSINESS**—Earl D. Odeker, founder and president of Edo Corp., and one time owner of Aviation Week's predecessor, Aviation Magazine, has fully denied rumors that Edo is out of the float business.

While the George Point, L. I., Edo plant has been concentrating recently on the Fahey, Navy and Army contracts, it has an "intense" interest in the development of the "short" and has produced a production model 3600 float for the Antonov Sojka and Model 1440 floats for the Cessna 150.

Sojka division for floats has been consolidated into the Edo general aircraft department. "We have been in the float business 25 years and intend to remain in it," Odeker stated.

LETTERS

Footnote to a Postnote

M. A. Marder's letter in Aviation Week for Dec. 27, headed "Footnote to a Postnote," perhaps calls for the footnote to a footnote.

Since the "Proposed City Bag" article in which Marder referred was written by your released staff, it is obvious that no one born in my way surprised the author's reference to T. Claude Ross as the designer of Lexington's "Spout of St. Louis."

Mr. Marder probably has point amissively. Unfortunately, in the original article, I did not cite Claude Ross as the designer that perhaps others could be personal design Lexington's "paws." So much the worse.

Williams Morris claims although used the word "designed" in the broad sense. There is a small one-gating land school on private or company—T. Claude Ross has been behind the Army engineers for 26 years—and it is to that person or the larger one, that credit should go.

Furthermore, no one person designs an airplane. It takes a lot of people to do the job, and a lot of people deserve the credit. We at a 1954 "Spout" place a black foot for St. Louis (that is the name of the Spout of St. Louis name from a point) as the author's Marder intended.

In perspective, Marder, looking over down the gas pipe from your self appointed, the "big," 1/2 Stock, overdrive will agree that Claude Ross's less expensive engine blocks for more than a quarter century.

WILLIAMS MORRIS, Public Relations Manager
Rome Aerostatic Company
San Diego 12, Calif.

Change of Pace

For those in particular places our attention is drawn to the one at Day 27. Give us the story of the self-loading gun. In Fred Week and Otto Kupper on the one flying aircraft. The other on the 1949 Cleveland Air Races indicated that power airplane would be an jet. Bring.

It is true that there is a great opportunity to get program and sales and more efficient personnel and a more outstanding R&D strength for all principle areas of change of pace.

We will set up a mobile plant and hope that the manager will be a general which includes clean aircraft and bring along with great control, efficiency and make a short bell curve, need. Land and water, and flying things could be seen directly as base of the standards to take off in the next year. The results of the same figures could be ground control and a short bell curve for the size, so that the field drops across the land line takes the price and the operation would lower the money saved.

This is a chance for a good place, a good mobile plant to better power aircraft and some real advertising. This should give the the job.

FRANCIS THOMAS
Arlington, Virginia

(Mr. Thomas is chief engineer of Clark's Aircraft Service. And for writing the letter as a personal opinion of a private citizen.—Ed.)

Refueling With Marconi Glasses?

Generally, GoodNite® Reusable Plastic Lenses—especially when they are friends of yours. Has over 1/2 of the story at the bottom of page 50 of the Oct. 31 issue of your excellent magazine. "With percent installations of reports are more right home to last one with 7000 gals." According to the author, "After 1000 hours of use, one uses only 175 gals per month." The last figure is given under "After 1000 hours of use, one uses only 175 gals per month." What rule? I wonder if this is for workers using normal glasses or reasonable glass workers using their glasses.

BT. Facon
SAC Division, Old Corp.
58 W. 53 St., New York 20, N. Y.
(Figures were given Aviation Week by the Air Force—Ed.)



We have quite a following too~



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AIR TRANSPORT

Scheduled Lines Top Safety Record

1948 mark is best in air transport history; international operators take highest honors.

By Charles Adams

The U. S. scheduled air transport industry claimed for the best safety record in its history in 1948, and for the second consecutive year international operators took top honors.

Certified domestic, transoceanic, international flight carriers and feeder operators flew an estimated 7,765,260,000 revenue passenger miles in 1948 with only 100 passenger deaths. The passenger fatality rate per 100 million passenger miles flown during the year was approximately 1.3—considerably lower than the previous mark of 1.6 set in 1946 and 1947.

Long-Haul Progress Shows.—Last year's record statistics among passengers in safety of computed with the figures for more than 31 million per 200 million passenger miles flown in 1948, when comparative statistics first became available. In 1947, the overall industry passenger fatality rate was about 7 per 100 million passenger miles flown.

During 1948 the domestic transoceanic line four fatal accidents and 83 passenger deaths, compared with five fatal accidents and 399 passenger deaths in 1947. U. S. flag carriers operating internationally concluded last year with only one fatal accident and 20 passenger deaths, against two fatal accidents and 29 passenger deaths in 1947. (Accident-correcting case deaths are not recorded.)

Domestic passenger fatalities last year were 1 per 100 million passenger miles flown, compared 1.2 in 1947. Domestically, the rate for 1948 was 1.06 against 1.05 in 1947.

Class Starts For Feeders.—The feeders left their safety record unscathed. Since the first certified short-haul operator began service in August 1948, there has been a passenger fatality on a feeder flight.

Last year's domestic accidents involving passenger fatalities, Jan. 13, Olson Hrl. Md., Eastern Air Lines DC-3, two crew and three passenger deaths; June 10, Colorado B-17, Delta Air Lines DC-4, four crew and eight passenger deaths; June 17, Mt. Carmel Pa., United Air Lines DC-6, two crew and 39 passenger deaths; and Aug. 29, Worcester, Mass., Northwest Airlines, Matto

with three crewmen and 27 passengers. This accident, together with the charter plane crash early that month at Scottsboro, killed eleven Yale University students and three crewmen, is causing considerable concern in industry and Civil Aeronautics Board quarters and may hasten the slowdown on non-scheduled flight services.

Aviation Without Achievement.—Flight carriers, the safety achievements of 1948 and of 1948 are Air Lines' record of 3,935,000,000 passenger miles since May 3, 1945. In building up the total, Air Lines had 7,765,000 passengers and flew 160,000,000 consecutive safe plane miles—a figure equivalent to about three years' operation of the Berlin airlift at its peak rate.

Carriers which boasted long safety records as Jan. 3, 1948 (date of last passenger fatality in continental United States) May 18, 1947, Caribbean Airlines had ten accidents since records were established with CAR on Sept. 1942. Chicago & Southern (Aug. 5, 1948) and Central American (Aug. 18, 1948), both of which had no fatal accidents in 1947, had 10 fatal accidents since establishment in 1939. Mid-Continent (Aug. 15, 1948), Northwest (no fatal accidents since establishment in 1938), Pan American (Aug. 27, 1945) and United, Midwest & Central Airlines (no fatal accidents since records were established in 1940).

CAB Won't Call Off NAL Investigation

The Civil Aeronautics Board has refused to dismiss its investigation to determine whether National Airlines safety should be transferred to other carriers but the federal agency is trying to end the went-won't of NAL and the industry's strong feelings on the problem by a maximum cleanup of CAB's procedures. National's conclusion is that the Board is without legal authority to conduct the investigation because it lacks power to order the airline to cease or to reduce its practices.

The spokesman also argued that continuation of the investigation is contrary to the public interest and will seriously impair NAL's efforts to improve its financial position.

Not A Discretionary Case.—At the more basic, the Board argued that the proceeding, initiated but still otherwise, will be an "adversary case" and that CAB declined, it is in a better position to determine how a particular portion of the domestic motor carrier would best fit into its overall structure.

A finding that transfer of one or more segments of National's system to other carriers would be in the public in-

terest is only one of several findings that could be made as a result of the investigation, CAB observed.

The Board might also conclude that an sizable part of NAL's traffic is in the public interest or that through service by equipment interchange, as publicly suggested by National, (Aviation Week, Dec. 27) is the best plan for integration of the carrier's route into the domestic pattern. Desirable is enough National and another carrier presents as additional alternative findings."

Possible Disposal.—CAB said it does not have to decide now whether it has authority to order the transfer of a carrier's routes within the company's own system. The Board declared in its order, "the investigation did not assert the power, and the transfer is not yet an order. CAB continues the current practice which it has followed since 1948 for CAB 1404 which is nearly unexploited, and a new proceeding will be initiated to have NAL's disagreement if the move is found to be in the public interest."

As to National's argument that its credit position is being hurt by the investigation, CAB noted that one of the main sources of difficulty faced by the whole air transport industry may be in the existing route pattern.

"Unless we can take steps to revise and improve that pattern, the industry's troubles may reappear. We are convinced that in the long run the move is for the good of the industry."

Follow?—Chicago & Southern—CAB does not believe that this is among the domestic carriers again easily and single out for an investigation as a result of "political influence" growing out of the 10-month pilot-style strike in November. It is believed that the Air Lines Pilot Association, through American Federation of Labor President William Green, to have the White House "pressurized" CAB into ordering the NAL probe last September, were widely circulated.

National claims that at the time the probe was instituted it had a record of over 100 million hours in operation and a financial structure similar to that of all other carriers. The NAL spokesman adds, "The existence of this investigation places every carrier in apparent jeopardy of reversion of its certificate, regardless of its status as felon or innocent, and irrespective of its compliance with the terms of the Civil Aviation Act."

The Board's action has aroused National's program in repairing its corporate position since initiating of the pilot strike, the carrier's officials have stated.

They said that the probe also has been used to keep the administration of a proposed merger between National and Delta Air Lines.

A finding that transfer of one or more segments of National's system to other carriers would be in the public in-

Two Carriers Would Take Inactive Feeder Routes

More pressure is building up on the Civil Aeronautics Board to withdraw route authorizations made to feeders which have not automated their systems.

Massachusetts Airlines, which makes scheduled daily flights between Boston, New Bedford, Martha's Vineyard and Nantucket, Mass., has asked CAB for permission to expand over route segments presently covered by the carrier's route to B. W. Wiggin, Boston. Specifically, Massachusetts Airlines is granted dual-class bus service from New York and Boston and between Boston and Achray, N. Y., via numerous intermediate points.

Certified Upgrade.—This year Wiggin received its certificate for Boston-Albany routes in CAB's New England area one year ago, June 1948, but has not begun service. The certificate expires next December.

Meanwhile, the chamber of commerce of Collier, Fla., says in the name of Southern Airways' still-much-larger sister, has asked CAB to extend the company's route map why its authorization should not be transferred to some other existing airline serving the area. The move followed shortly after Florida Airways, an active feeder, had made a bid to CAB to take over Southern's routes.

Collier's chamber of commerce noted that about 21 months have passed since Southern was designated for feeder service. The chamber supported Florida Airways' contention that Southern held the organization and financial backing to start operations. Southern failed to nominate an routes this spring.

Permit to Avianca

Avianca, National de Colombia (Avianca) has announced a three-year loan as a major project to operate from Bogota and Barranquilla, Colombia, to Miami and New York via Jamaica, British West Indies. The temporary authorization was made by the Civil Aviation Board and approved by President Truman.

In its decision, CAB rejected the contention of National Airlines and Eastern Air Lines that Avianca is controlled by Pan American Airways and that its application therefore should be denied. The Board and the Colombian government and officials of that country on behalf of CAB said also it did not believe Avianca would divert a substantial amount of traffic from U. S. carriers.

Avianca has been operating from Colombia as far as Manila since January, 1947. The carrier will use 35 passenger DC-4s on the Bogota-Barranquilla-Miami-New York run.

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It's a tribute to a superior product, backed by superior service...to CAB's steadily-growing preference for planes with Continental power. It's based on proven performance, economy and long life, as well as on the knowledge that parts and service, when needed, are at hand wherever you may fly. Nine outstanding models, starting with the A-16, are providing dependable power for today's finest personal, family and executive type planes.

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CONTINENTAL



Airline Safety Record*

Year	Passenger Miles	Fatalities	Rate
1948	34	23	6.6
1947	36	24	6.6
1946	25	16	6.4
1945	8	6.0	75.0
1944	23	9.2	39.6
1943	19	4.1	21.1
1942	46	9.5	20.3
1941	51	9.8	19.2
1940	32	5.1	15.9
1939	19	2.7	14.3
1940	35	2.7	7.7
1941	57	2.7	4.7
1942	95	3.1	3.2
1943	52	1.6	3.1
1944	68	2.3	3.4
1945	93	2.3	2.5
1946	188	1.6	1.0
1947	289	2.7	1.0
1948	185	1.3	0.7

*Includes domestic transoceanic, feeders and international flight lines.

*Passenger fatalities per 100,000 total passenger miles flown.

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- Holding work during assembly
- Applying pressure on plastic parts
- Holding parts for tight assembly
- Facilitating work for inspection and testing operations



A Clipper Aeroplane used in movie set for a Pan American sales promotion film. After it is completed it will be distributed to 20 Pan American district sales offices.



SAFETY IN PRODUCTION WORK

Production subcontractors are running production line operations by using Danly Kwik-Klamps. The Kwik-Klamps are being used to hold work more securely than former heavy-duty clamps. It is recommended to companies producing aircraft parts to use Kwik-Klamps for assembly. Kwik-Klamps are recommended to use production line machines, hand tools, power tools, and assembly fixtures. Hand tools, power tools, and assembly fixtures.

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Flights changing and changing in number of passengers and cargo. American Airlines has made arrangements in different areas to provide ample capacity space. This is a simple measure of the airline's concern for the safety of the flight or flight in flight.

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Films Used to Promote Air Travel

First shown by PAA in 1929, airline travelogues are now reaching countless millions through television.

Television is becoming an accepted medium for a picture airline promotional documentary. PAA started making pictures in 1929, and in 1931, a permanent film unit was set up. Different cities produced color films, or, in evolution, with a production running into the hundreds. The video audience, which saw these movies, had not much in the real box, as did the millions of people who saw the films in clubs, schools, church groups, and other organizations throughout the country.

PAA is leading the way in this area. Its production is for "American World Airlines," which is the first car-

to-the-airline medium for sale pictures. PAA started making pictures in 1929, and in 1931, a permanent film unit was set up. Different cities produced color films, or, in evolution, with a production running into the hundreds. The video audience, which saw these movies, had not much in the real box, as did the millions of people who saw the films in clubs, schools, church groups, and other organizations throughout the country.

Philippines pictures, with an eye to sell the budget, had stops of PAA film until the local studios and foreign

Speaking from Experience
AMERICAN AIRLINES
Europe and Asia

WHAT'S IT LIKE to FLY to EUROPE?

Introducing this use of American Airlines color slidesfilm travelogues. Kodachrome slides require only a small projector, are inexpensive and can be shown almost anywhere.



Travel agent sees PAA travel sales film to tell sample no longer shown. Color slide shown from Ruth Johnson's cottage in England.



Color Estimators have come to a corner of Eastern Air Lines' room "In Power & Price Power." This was released last year

in color production. "Wings to Viking Land," a brochure on Scandanavia, has been released over two networks.

• **American Skies, Latin.**—Currently, American is holding up its library of Kodachrome slides and is trying to make these available again. When released on the video, sales of slides are official at American and this example.

• **American Skies, Rydeisenland.**—After Air Lines, another of the air carriers which has recognized the promotional value of films has sponsored what it feels is one of the most important air line pictures to date—“Air Power.”

• **PAA on Sale, Valuette-Dial.**—A list of pictures in slide volume, in first to estimate last. Last, three load of PAA's Martin and Still Picture division point out that a particular film's selling power has often been tested in its original market. For example, following a screening of “Wings to Latin and the Caribbean,” in Miami, a large number of people in the audience were booked for passage.

Another part of the air lines' promotional sales program is the use of color slides supplied complete with a playback script to travel agents who use the slides in supplement direct sales talks.

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• **PAA Europe Film—T.O.A.**—Released its first film last year. A second production has completed last month, and showing bookings are being put on still another film—a travelogue on Europe.

United Air Lines became a film pro-



Conversion pictures to shoot into screen for PAA film "Wings to Hawaii."



DC-4 cockpit gear in picture taken for use of Pan American's sales film.



Conversion can easily be distinguished from the equipment. He left radio head

LETTERS

Comments on Helicopter Editorial

Following are letters commenting on *Airways Week's* editorial Jan. 3, "Let the Geigens be My Gopins."

Yours ultimo is excellent. I feel glad encouragement for all who write or let you know their thoughts on the subject which you believe. The concern of this is so unpredictable as to make a man who starts his course as a "You expect" convert of his great peers and suddenly be directed only in one event. I would rather take my chances on the firm ground of it. I thank you here that on the material.

The military leaders showing the lack chapter from their ranks are not one example. We see it because built in our competitors. We were apparently satisfied to have a little air project. *Aerospace Corp* made a good start in the begin time.

The result was that helicopter is a big wog in both jet and rocket propulsion. Radar may be another example.

Now comes the helicopter, as very own development, with increasing safety in military, as well as in commercial, and we are in the air making application almost as much as we did pre.

This is like saying, as please, health insurance when in many cases no other vehicle need be of any value. (Because of reduction and disrupted strength), it depends upon the flying strength, and in field mobility, generally there is no engine which can be mobile compared with the helicopter.

And yet if it waits patiently while what it "wants," it has been proven during all roads, and in the air, that it is the best aircraft. It has the Sabbath buyer to do the use of the transport in military strategy but let us hope that we can encourage for ourselves as far as the following prospects of the helicopter are concerned.

I think that first of all we have a new idea to be considered. This is at the cost of the future. I made when I think what would have been at the corner of the atomic energy project had the facts been known publicly when it was first started. It took courage to be willing to then the very possible.

Can we do a great service by changing that all exploration into the new worlds not, of course. But when a project is in use is the helicopter now in the risk that the valuable will be destroyed the other way—for not using it?

My dear friends keep pace with your progressiveness and courage.

With Best
Fugur & Best
Southern Building
Washington D. C.

(Mr. Progin, former chairman of CAB, is well known for his helicopter support—Ed. Note)

It is encouraging to know that those who have struggled to keep the helicopter industry alive have found in you an kindred voice that can clearly state the case in such simple straightforward and ringing language. I am sure that this is the part of the large, an much-needed service to the and on many other occasions.

It is to be hoped that the thoughts you expressed will have the rather limited character of an aviation trade publication to those people who do or do not have an interest in your views. I feel very first of all a message public could send a wider scope of our trading public they would in their innate good sense demand the proper action by our lawmakers and then charged with unusual definite.

The public papers are entitled to know that adequate attention is being given to the number of executives and safety as long as these funds are being expended as improvements of inoperable derivatives. This news public pushes these vast expenditures and gives grounds of fear and attack. In this case, the public papers are entitled to a full account of all tasks for which is entitled to air appropriate expenditures during a time limit for certain definite.

The consumer self-sufficiency of the industry is to be maintained as far as possible. It is important to know the availability of the proper tire, machine. We have anticipated that our needs would be met in 1957 by a purchase of 160,000 to 180,000 lb gross weight, having a capacity of from 11 to 12 passengers on addition to 2000 to 3000 lb of cargo.

The manufacturer of our present equipment (Cessna) claims that such a machine is practical and feasible and moreover that sales of the services indicate a need for substantially the same product. But they are not going to go into the production of a high gross load aircraft, due to design and cost. I believe our own company could not undertake a primary engineering development project of this scope.

In order to meet this situation, I have tentatively proposed that a board of Directors, including the Los Angeles Aviation Association, the "schedule" commercial division of the industry, and the Aerospace Association representing production, and I would like, if this procedure is suitable as an element on staff level at the same service. However, this board could be broadened to include at least one from the CAB, CAA, etc.

I personally feel this is a way which can be best suited for the helicopter, resulting in some long term result in high cost cut under which it seems to be needed and as we are well stated in our editorial (in defense of the helicopter).

In addition to this method with no profits, there all efforts should be made to keep the costs down, such as my of them and that with the exception of the extreme cold weather, the job we are about here, every day is about the night, is right, there must be effort to do this.

We, of course, would not like to have that published in our service in the service media because for us they are for us doing a fine job. But I am disappointed that some men of engineering of the expenses and

problem concerning the helicopters don't do that.

Given the past 15 months we have now had an enormous amount of valuable experience which is available to anyone, under proper circumstances, and the need itself is not far had.

The facts of life are becoming steadily apparent to me that AM-44 will within the very near future enlarge the capacity of its resources as well as the limitations of the present day AWI operation technique. As the present situation is concerned, I am sure that the industry is turned down to know that as December 30 and turned down somewhat between 180,000 and 190,000 lb of gross load and annual and roughly 210,000 to 230,000 lb of profits. Just how many passengers we could have captured to and from Los Angeles, I am not sure, but probably only in a few years, but considering that 12,315 passengers moved in and out of Los Angeles Airport during November, it would not take a moment to figure the potential on that note.

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